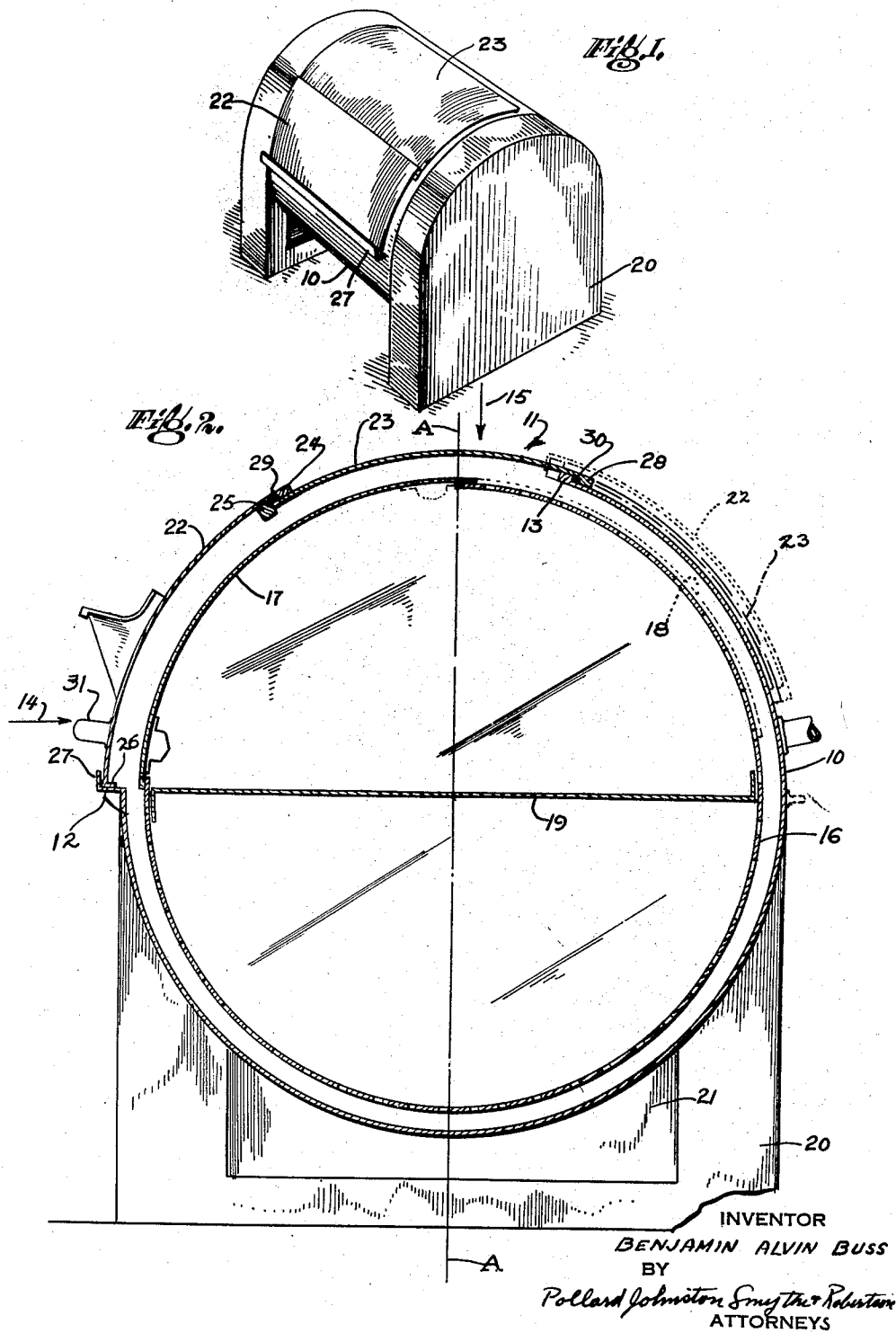


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WASHING MACHINE

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1 Claim. (Cl. 220—10)

This invention relates to a washing machine or the like and especially the closure means or doors for the access opening in the casing of the washing machine.

Commercial washing machines used to wash clothes and similar articles usually embody a stationary shell or casing and a rotatable or oscillating cylinder within the shell, the cylinder being perforated and holding clothes during the various washing operations. The shell and cylinder must be provided with access openings to permit the easy insertion and removal of the wash and these openings are equipped with closures or doors.

In many instances, it is desirable to provide for access to the machine selectively from the side and top, unloading taking place from the side and loading from the top. A single door for closing such a large access opening for the shell is not satisfactory for many reasons. One difficulty is that the door would be so long in its direction of movement that its movement could not be accommodated on the shell.

One of the objects of the invention is to provide an arrangement for closing a washing machine aperture which will permit access to the shell from the side or top thereof.

Another object of the invention is to provide an improved closure for the shell of a washing machine or the like which can be employed in conjunction with a shell or casing having a large access opening, yet being of such construction as to be easily operable to open such opening so that the machine can be loaded from the top and unloaded from the side.

In one aspect of the invention, the arrangement for the access aperture providing for side and top access may comprise a plurality of doors of arcuate shape slidably mounted upon the shell. In order to make it possible to open the doors for either side access or top access, the door means can have interengaging means therebetween so that further movement of the side access door in the opening direction will cause movement of the top access door to open the access aperture in the top direction. Thus, the aperture can be opened or closed by one door operating movement. It should be apparent that the terms "side" and "top" include directions that are angularly spaced but are other than precisely at the top or side of the machine, the access aperture being of restricted circumferential or arcuate extent relative to the shell.

Other advantages, objects and features of the invention will become apparent from the following description, and drawings which are merely exemplary.

In the drawings:

Fig. 1 is a perspective view of a washing machine having its shell doors in closed position; and

Fig. 2 is an enlarged transverse section with both shell doors in closed position.

The door arrangement can be used on various types of machines, one example being the washing machine described hereinafter. The shell 10 may have an access aperture 11 extending from approximately a horizontal

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ledge 12 to a margin 13 which is slightly beyond the vertical center line A—A, side access being in the general direction of arrow 14 and top access from the general direction of arrow 15.

5 The clothes holding cylinder 16 is of the conventional type which may be rotated or oscillated, said cylinder having suitable perforations therein and a conventional access door 17. Access door 17 is movable from the closed position shown in full lines in Fig. 2 to the opened position illustrated in dotted lines 18. A division plate 19 may be provided, said division plate being attached to transverse partitions in the cylinder or to the ends thereof. The machine may be mounted on end supports 20 and may have the usual dump valve enclosing structure 21 at the bottom of the shell.

Doors 22 and 23 are slidably mounted on the outside of the shell or casing 10 in such a manner that the door 23 is slidable relative to the outside of the shell, the side access door 22 being slidable relative to top access door 23. Said doors may have their edges suitably guided in channels or the like. The door 22 is equipped with a rear shoulder 24 located along its uppermost edge, the shoulder being arranged to contact the front shoulder 25 of the top access door 23.

25 The shoulder 25 of door 23 extends both above and below the door surface. The portion extending above the door provides an abutment to be contacted by the shoulder 24, and the portion extending below the door presents an abutment to contact the raised margin 13 of the shell 10. The latter means prevent door 23 from sliding along the upper rear portion of the shell beyond the fully opened position of the doors.

Door 22 is provided with a flange 26 at its lowermost or front portion which is arranged to fit inside a lip 27 35 formed along the horizontal ledge 12 of the shell 10. Door 22 is arranged to have a tight fit against lip 27 to prevent any leakage of fluid from the machine at this point.

When door 22 has been moved in the opening direction, so that flange 26 contacts the shoulder 25 of the door 23, further movement of door 22 will cause door 23 also to be moved along with door 22 toward a fully open position. Thus, after flange 26 contacts the shoulder 25 of the door 23, door 22 transmits any additional opening movement directly to door 23.

Shoulder 28 is provided at the rearmost margin of door 23 so as to make contact with the raised margin 13 of the shell when the doors are moved in the closing direction, thereby stopping the movement of the door 23 in the proper relationship with the shell and the door 22. 50 Gaskets 29 and 30 are provided between the shoulders 24 and 25 and shoulders 13 and 28, respectively, to prevent leakage of fluid between the members. Handle 31 can be provided on door 22.

It is to be seen that according to this invention the large access aperture 11 extending from lip 27 to margin 13 is available so that there may be access to the machine either from the side or from the top. In many commercial installations, it is desirable that a washer be equipped with an access door arrangement so that it can be loaded automatically from a chute located above the machine and unloaded from the side. If the machine is to be loaded from the top, the cylinder 16 is stopped in such a position that its aperture faces upwardly toward the arrow 15. When access to the machine is desired only from the side, the cylinder is brought to the position shown in Fig. 2 and only door 22 opened.

The doors 22 and 23 when in fully retracted position do not extend circumferentially around the outside of the casing 10 to such an extent that a middle leg, flanges of a split top, pipe connections, etc., would interfere with complete opening. Further, it should be apparent

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that it will be easier to manipulate the doors as shown than would be the case with a single door.

When the doors are in fully opened position, the first movement of door 22 in the closing direction will move it alone, door 23 not being moved directly by the operator at first, but being moved by shoulder 24 of the door 22 contacting the upper part of shoulder 25 of the door 23. By the time shoulders 24 and 25 have come into contact, the door 22 has moved approximately half-way toward its closed position, so that when door 23 is moved by the shoulder 24, door 22 is in a position so that the gravitational effect upon door 22 may be of assistance in moving of door 23.

To operate the access doors, the operator grasps handle 31 of the door 22 and moves it upwardly so as to lift door 22 until it is circumferentially aligned with the door 23. When door 22 is in this position, the machine may be unloaded or loaded from the side, and further movement of the access door is optional.

When it is desired to load the machine from the top, such as by means of a chute, the operator continues to move the door 22 in the opening direction, such continued movement being responsible for movement of door 23 in the opening direction. The doors can be moved until they reside entirely at one side of the access opening, and resting upon the upper rear portion of the casing 10.

When it is desired to close the doors, the handle 31 is pulled toward the operator. When door 22 is approximately half-way toward its closed position, it picks up the door 23, the two doors then being moved as a unit into the position in which the aperture 11 is fully closed.

It should be understood that variations may be made in the details of construction without departing from the spirit of the invention except as defined in the appended claim.

What is claimed is:

In a washing machine having a horizontal shell of generally cylindrical configuration with an aperture for providing access from the side for unloading purposes

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and the top for loading purposes, and a clothes holding cylinder rotatably mounted within said shell and being provided with a closeable opening adapted to be positioned opposite said aperture, the combination including first door means of arcuate shape for closing access to the side of said shell, said first door means being entirely in front of the vertical center line of said shell and being substantially above the horizontal center line thereof when in closed position, second door means of arcuate shape for closing access to the top of said shell, said second door means having one edge on either side of the vertical center line of said shell when in closed position, whereby said second door is in a balanced condition when in its closed position, means on said shell holding said arcuate doors thereon in circumferential telescopic sliding relationship to each other, shoulder means along the lower edge of said second door, shoulder means along the upper edge of said first door in overlapping relationship with said second door and engageable with said shoulder means along the lower edge of said second door so that said second door will be moved with said first door as the first door is moved toward closed position from fully opened position, lip means on said shell and shoulder means along the rear edge of the second door engageable with said lip means on said shell for stopping said second door as it reaches closed position, said first door being slidable relative to the second door when the second door is in closed position so as to provide access from the side of said shell.

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